

### REMARKS

Reconsideration is respectfully requested.

Claims 1-8 are pending, with claim 1 being the sole independent claim. Claim 1 has been amended. Support can be found in the specification at least at page 6, lines 12-13, 16-17 and 24-26. No new matter has been added.

Turning now to the Office Action dated September 10, 2001, Applicant understands this Office Action to contain the following rejections:

- 1) Section 102(b) rejections: claims 1-8 over U.S. Patent No. 5,268,414 (Nakai et al.); claims 1, 5-8 over Japanese Patent Application 05320483 (JP '483);
- 2) Section 102(e) rejections: claims 1, 5-8 over U.S. Patent No. 5,962,122 (Walpita et al.) or claims 1-8 over U.S. Patent No. 6,027,771 (Moriya);
- 3) Section 103(a) rejections: claims 1-8 over Nakai et al. or Moriya, in view of U.S. Patent No. 5,141,985 (Asai et al. '985) or U.S. Patent No. 5,308,913 (Asai et al. '913), and further in view of U.S. Patent No. 4,269,947 (Inata et al.).

Applicant respectfully traverses all of these rejections.

#### The Section 102(b) rejections:

Nakai et al. does not disclose or suggest rutile-type high solids metal oxide coated titanium dioxide having a longest dimension of less than about 4  $\mu\text{m}$ , as recited in claim 1.

Regarding JP '483, enclosed herewith in an accompanying Information Disclosure Statement is a machine translation of JP '483, which Applicant wishes to point out is subject to errors in translation. JP '483 does not appear to disclose or suggest the use of rutile-type high solids metal oxide coated titanium dioxide having a longest dimension of less than about 4  $\mu\text{m}$ , as recited in claim 1. Compare JP '483 at page 11, paragraph number [0031].

Withdrawal of the Section 102(b) rejections is requested.

#### The Section 102(e) rejections:

Walpita et al. does not disclose or suggest rutile-type high solids metal oxide coated titanium dioxide having a longest dimension of less than about 4  $\mu\text{m}$ , as recited in claim 1.

Moriya does not disclose or suggest rutile-type high solids metal oxide coated titanium dioxide in an amount sufficient for a liquid crystalline polymer composition to

achieve a comparative tracking index (CTI) rating above 220 volts and a flammability rating of V-0 in test UL-94 at a 0.0625" thickness, as recited in claim 1. At column 6, lines 50-53 of Moriya, it is disclosed that in a resulting film the concentration of particular material should be in the range 1 to 30 volume percent, preferably in the range about 10 to about 20 percent. From this, it is unclear what Moriya teaches or suggests with respect to weight percent amount on a polymer composition basis. In Example 7 of Moriya, there is provided a film, which is made from a composition containing 95 wt% LCP and 5 wt% CR-60 titanium dioxide particles. Based on an internet search, it appears that CR-60 is currently the tradename for a rutile-type titanium dioxide, though it is not clear if CR-60 is metal oxide coated. Regardless, Moriya only necessarily discloses a compositional range of 5 wt% in Example 7, and Applicants submit that this is not a sufficient amount to achieve a CTI rating above 220 volts and a V-0 flammability rating, as recited in claim 1.

Withdrawal of the Section 102(e) rejections is requested.

The Section 103(a) rejections:

None of Nakai et al., Moriya, Asai et al. '985, Asai et al. '913) and Inata et al., when taken alone or any combination with the others, suggests the electronic or electrical apparatus of claim 1.

The above comments with respect to Nakai et al. and Moriya apply equally here. Further, Applicants believe that Nakai et al. might even teach away from claim 1, in that Naka et al. requires the use of a silicone rubber, which is flammable and therefore might degrade the flame resistant properties of the polymer to which it is added.

Asai et al. '985 discloses at column 5, lines 5-11 the use of rutile-type titanium dioxide, including such titanium dioxide surface treated with a hydrated oxide of Al, Si, "or the like", at 5-25 wt% of wholly aromatic polyester compositions. No mention is made of improvement of flame resistant properties, and only a general reference is made to insulation properties, inter alia, of wholly aromatic polyester resins at column 1, lines 36-40 of Asai et al. '985. As such, Applicant submits that Asai et al. does not suggest the use of the liquid crystalline polymer compositions, as recited in claim 1, in an electrical apparatus also comprising an electrical conductor carrying a voltage of 200 volts or more. The object of Asai et al. '985, as recited at column 2, lines 45-51,

is to provide a wholly aromatic polyester resin composition having a multitude of improved properties, none of which relates to flame resistance and high CTI.

The same remarks with respect to Asai et al. '985 apply also to Asai et al. '913. See Asai et al. '913, column 5, line 55, column 6, lines 22-27, and column 2, lines 51-58.

As for Inata et al., the aromatic polyesters recited therein do not have the same structure as the thermotropic liquid crystalline polymers of the present invention. Inata et al. requires the use of glycols, which introduce aliphatic carbon atoms in the main polymer chain. Furthermore, none of the specific polyesters mentioned or used in Inata et al. are thermotropic liquid crystalline polymers.

In view of the above, Applicants submit that none of references relied upon in the Section 103(a) rejection, either alone or in any combination with the others, discloses or suggests the electronic or electrical apparatus of claim 1. One of ordinary skill in the art, when confronted with finding a suitable composition for use in making a component to be used in an electronic or electrical apparatus also comprising an electrical conductor carrying a voltage of 200 volts or more, would not have been motivated to use the composition as recited in claim 1. At best, the references might generally disclose the use of parts made from LCP compositions in electronic or electrical apparatus. However, Applicants submit that not all apparatus inherently carry at least 220 volts, as stated in the Office Action. It is believed in the U.S., for example, that while some appliances may be designed for 220 volts, 120-125 volt appliances are very common, and may in fact form the majority of appliances. None of the references discloses or suggests methods for controlling voltage and flame resistance in LCPs. None of the references or any of them in combination suggest that rutile-type  $\text{TiO}_2$  in sufficient quantities in LCP compositions will have both high CTI and good flame resistance. Only now, with hindsight, would it have been obvious, and still only obvious to try at best, the composition as recited in claim 1, in view of the references, since these references are simply silent as to the use of compositions having both a CTI rating above 220 volts and a flammability rating of V-0 to make a part in electronic or electrical apparatus also comprising an electrical conductor carrying a voltage of 200 volts or more, as recited in claim 1.

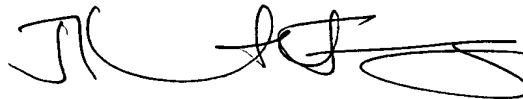
For the foregoing reasons, Applicants submit that independent claim 1 is allowable over the cited art.

Dependent claims 2-8 are believed to be allowable for the same reasons. Moreover, each of these dependent claims recites additional features in combination with the features of its respective base claim, and is believed allowable in its own right. Individual consideration of the dependent claims is requested.

Applicant believes that the present Amendment is responsive to each of the points recited by the Examiner in the Office Action, and submits that the present application is in allowable form. Favorable consideration and passage to issue of the present application are solicited.

Applicant's undersigned attorney may be reached at the below-indicated numbers.

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

In showing the changes, deleted material is shown as [bracketed], and inserted material is shown underlined.

**IN THE CLAIMS:**

1. (amended) An electronic or electrical apparatus, comprising:  
a component formed from a liquid crystalline polymer composition consisting essentially of:
  - a) a thermotropic liquid crystalline polymer component which is an aromatic polyester, poly(ester-amide), poly(ester-imide), poly(ester-amide-imide), or mixtures thereof, and
  - b) a rutile-type high solids metal oxide coated titanium dioxide [at least one non-conductive filling agent component] having a longest dimension of less than about 4  $\mu\text{m}$ , in an amount sufficient for said liquid crystalline polymer composition to achieve a comparative tracking index (CTI) rating above 220 volts and a flammability rating of V-0 in test UL-94 at a 0.0625" thickness; and  
[wherein said electronic or electrical apparatus has a comparative tracking index (CTI) rating above 220 volts and a flammability rating of V-0 in test UL-94 at a .0625" thickness, and said apparatus also comprises]  
an electrical conductor carrying a voltage of 200 volts or more.